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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Harry Eugene Flynn, Robert O. Martin and Charles A. Natalie
Serial No.: 10/670,981
Title: CHANGING FLUID FLOW DIRECTION
Filing Date: September 25, 2003
Examiner: James M. Hewitt
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APPELLANTS' BRIEF ON APPEAL

Dear Sir/Madam:

This Appeal Brief is presented in support of the Notice of Appeal to the Board of Patent Appeals and Interferences, filed on April 18, 2006, appealing the Final Rejection of Claims 12-14 and 28-29 of the above-identified application, as set forth in the Final Office Action mailed from the United States Patent and Trademark Office ("USPTO") on March 30, 2006 (the "Final Office Action").

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APPELLANTS' BRIEF ON APPEAL

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1. REAL PARTY IN INTEREST

The real party in interest of the above-captioned patent application is the assignee, TRONOX LLC.

2. RELATED APPEALS AND INTERFERENCES

There are no known other prior or pending appeals, interferences, or judicial proceedings which may be related to, directly affect, be directly affected by, or have a bearing on the Board's decision in the pending Appeal.

3. STATUS OF THE CLAIMS

Claims 1-11 and 15-27 have been canceled and Claims 12-14 and 28-29 stand rejected. Claims 12-14 and 28-29 are being appealed.

4. STATUS OF AMENDMENTS

In the Response filed April 28, 2006 (i.e., subsequent to final rejection), Appellants amended Claims 28-29. The Examiner entered these amendments in the Advisory Action mailed July 14, 2006.

5. SUMMARY OF THE INVENTION

There are two pending independent claims: Claim 12 and Claim 28. Claim 12 is drawn to the more general embodiment of a piping elbow, comprising a substantially cylindrical body containing a removable liner, a tangential inlet containing a removable liner, and a tangential outlet containing a removable liner. Claim 28, on the other hand, is drawn to a preferred embodiment of a piping elbow, comprising two substantially-identical components including 1) a substantially cylindrical body section containing a removable liner and 2) a tangential inlet/outlet containing a removable liner. Claims 12 and 28 are both supported by Figures 1-13 and the specification as a whole, but especially at page 1, line 23 to page 2, line 22 (summary); page 9, lines 7-29 (description of liners); page 10, lines 1-22 (description of two substantially-identical components); page 11, line 3 to page 12, line 26 (description of liner creation); and page 12, lines 3-26 (description and advantages of removable liners).

6. ISSUES PRESENTED FOR REVIEW

I. Claim Objections

The Examiner has objected to Claims 28 and 29. In support of these objections, the Examiner asserts the following:

In claim 28, line 3, "the body section" should be "each body section".

In claim 29, line 1, the phrase "where in the removable liners are" should be replaced with the phrase "wherein each of the removable liners is".

Appropriate correction is required.

The Examiner has also objected to Claims 28 and 29 under 37 C.F.R. §1.75(i) and has required appropriate corrections.

II. Claim Rejections – 35 U.S.C. §112

The Examiner has rejected Claims 28 and 29 under 35 U.S.C §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In support of this rejection, the Examiner asserts the following:

In claim 28, lines 3-5, the use of "or" renders the claim indefinite. In lines 3-4, the phrase "each component including a tangential inlet or outlet" erroneously allows for each component to have an inlet, or for each component to have an outlet. In lines 4-5, it is unclear as to which inlet or outlet the phrase "the tangential inlet or tangential outlet containing a removable liner" refers; there is an inlet or outlet on each component.

Claim 29 is rejected as it depends from claim 28.

III. Claim Rejections – 35 U.S.C. §102

The Examiner has rejected Claims 12 and 13 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,301,651 issued to Cocchiara et al ("Cocchiara"). In support of this rejection, the Examiner asserts the following:

With respect to claim 12 and with reference to FIG. 13, Cocchiara et al discloses a piping elbow, comprising: a substantially cylindrical body having a first end (37) and a second end (38), wherein at least one of the ends is removably attached and wherein the body contains a removable liner (40,41,42); a tangential inlet (33) attached to the body near the first end having a diameter smaller than the diameter of the body, wherein the tangential inlet contains a removable liner (see FIG. 13); and a tangential outlet (35) attached to the body near the second end having a diameter smaller than the diameter of the body, wherein the tangential outlet contains a removable liner (see FIG. 13).

The first end (37) and second end (38) are said to be welded to the reactor.

The ends are considered removable insofar as they can be removed by a given means, e.g. a cutting means. Similarly, the liners are considered removable insofar as they could be removed by force.

With respect to claim 13, the method of forming the device is not germane to the issue of patentability of the device itself. A product must structurally distinguish from the prior art. Cocchiara et al meets the claim insofar as the tangential inlet liner and the tangential outlet liner are disposed in a cavity in the body liner. As shown in FIG. 13 and described in col. 8, ll. 49-53, inlet and outlet liners 42 extend into body liner 40 (note the darkened line representing liner 42 that extends into body liner 40).

IV. Claim Rejections - §103

A. Rejection of Claim 14 under 35 U.S.C. §103

The Examiner has rejected Claim 14 under 35 U.S.C. §103(a) as being unpatentable over Cocchiara in view of U.S. Patent No. 4,55,721 issued to Carty et al. ("Carty"). In support of this rejection the Examiner asserts the following:

Cocchiara et al does not disclose that the liners are ceramic as required by claim 14. Carty et al teaches that is known to provide an elbow with a ceramic liner (column 2, lines 50-55) for wear resistance of the fluids on the elbow body. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to fabricate the liners from ceramic rather than stainless steel as ceramic would be desirable for reasons of both cost and weight and further since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

B. Rejection of Claim 28 under 35 U.S.C. §103

The Examiner has rejected Claim 28 under 35 U.S.C. 103(a) as being unpatentable over Cocchiara in view of U.S. Patent No. 255,427 issued to Forman ("Forman"). In support of this rejection the Examiner asserts the following:

As described above, Cocchiara et al discloses a piping elbow, comprising: a substantially cylindrical body having a first end (37) and a second end (38), wherein at least one of the ends is removably attached and wherein the body contains a removable liner (40, 41,42); a tangential inlet (33) attached to the body near the first end having a diameter smaller than the diameter of the body, wherein the tangential inlet contains a removable liner (see FIG. 13); and a tangential outlet (35) attached to the body near the second end having a diameter smaller than the diameter of the body, wherein the tangential outlet contains a removable liner (see FIG. 13).

Cocchiara et al fails to teach that the elbow comprises two substantially-identical components, wherein each component includes: a substantially

cylindrical body section having a first end and an open second end; a tangential inlet or tangential outlet attached to the body section near the first end, the tangential inlet or tangential outlet containing a removable liner wherein the second ends of the two components are removably attached to each other. Forman teaches that it is known in the art to provide a pipe joint comprising two substantially identical body portions each having a branch pipe connected thereto. The body portions are removably attached to one another as at E and F. Forming the joint in this manner permits the body portions to be relatively adjusted to permit the branch pipes to be oriented at various angles. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form Cocchiara's body in two halves in order to permit the tangential pipes to be oriented at various relative angles.

C. Rejection of Claim 29 under 35 U.S.C. §103

The Examiner has rejected Claim 29 under 35 U.S.C. 103(a) as being unpatentable over Cocchiara in view of Forman as applied to Claim 28 above, and further in view of Carty. In support of this rejection the Examiner asserts the following:

Cocchiara et al does not disclose that the liners are ceramic as required by claim 29. Carty et al teaches that is known to provide an elbow with a ceramic liner (column 2, lines 50-55) for wear resistance of the fluids on the elbow body. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to fabricate the liners from ceramic rather than stainless steel as ceramic would be desirable for reasons of both cost and weight and further since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 41 6.

7. ARGUMENT

I. Claim Objections

The Examiner's claim objections are well taken and most of the Examiner's suggestions were adopted in the amended claims proposed in the Response filed April 28, 2006 and entered by the Examiner in the Advisory Action mailed from the USPTO on July 14, 2006 (the "Advisory Action"). However, Appellants contend that the phrase "*the* body section" (emphasis added) in Claim 28 is appropriate because the phrase refers to "*a* substantially cylindrical body section" (emphasis added) of each component. This is made clearer in amended Claim 28, which has been amended as required by the Examiner pursuant to 37 C.F.R. §1.75(i). Appellants have also herein amended Claim 29 as suggested by the Examiner. Appellants contend that the reasons for the claim objections have been removed and respectfully request that these objections be withdrawn.

II. Claim Rejections – 35 U.S.C. §112

Each substantially identical component of Claim 28 includes a "tangential inlet/outlet." See, Specification, page 2, lines 12-16. Claim 28 has been amended to replace "tangential inlet or tangential outlet" with "tangential inlet/outlet." Because the components are substantially identical, a tangential inlet/outlet can be used either as an inlet or, alternately, as an outlet. It is only when the piping elbow is in use and fluid is flowing through the elbow that one inlet/outlet becomes an inlet and the other inlet/outlet becomes an outlet. Appellants contend that Claims 28 and 29, as presently pending, comply with 35 U.S.C. §112 and respectfully request that these rejections be withdrawn.

III. Claim Rejections – 35 U.S.C. §102

Cocchiara does not teach or suggest one or more limitations required by Claims 12 and 13. Specifically, Cocchiara does not teach or suggest a cylindrical body having at least one end that is removably attached. Additionally, Cocchiara does not teach or suggest removable liners.

A. The Examiner's interpretations of "removable liner" and "removably attached" are not proper.

The Examiner has adopted a definition of "removable" and "removably attached" as put forth in the Examiner's description of Cocchiara on page 4 of the Final Office Action:

The first end (37) and second end (38) are said to be welded to the reactor. The ends are considered removable insofar as they can be removed by a given means, e.g. a cutting means. Similarly, the liners are considered removable insofar as they could be removed by force.

With respect to claim 13, the method of forming the device is not germane to the issue of patentability of the device itself. A product must structurally distinguish from the prior art. Cocchiara et al meets the claim insofar as the tangential inlet liner and the tangential outlet liner are disposed in a cavity in the body liner. As shown in FIG. 3 and described in col. 8, ll. 49-53, inlet and outlet liners 42 extend into body liner 40 (note the darkened line representing liner 42 that extends into body liner 40).

Appellants contend this is not a proper interpretation of “removable” or “removably attached” as these terms are used in the presently pending claims.

The Examiner seems to give no weight to the adjective “removable” or the adverb “removably.” For example, the Examiner asserts that the liners in Cocchiara are “removable” insofar as they could be removed by force. With this interpretation, there is no difference between a “liner” and a “removable liner” as any liner can be removed by force if there are no limitations on the type or amount of force used. Similarly, the Examiner asserts that the ends in Cocchiara are “removably attached” by virtue of being welded to the reactor and that they can be removed by a given means such as a cutting means. With this interpretation, there is no difference between an end that is “attached” and an end that is “removably attached,” since an “attached” end can be removed via a cutting means if there are no limitations on the cutting means.

Appellants assert that a proper interpretation of the phrases “removable liner” and “removably attached” is one that recognizes that these phrases insert structural limitations into the claims. The adjective “removable” limits the structural relationship between the liner and the structure from which the liner can be removed. This is even more clear with the limitation that at least one of the ends is “removably attached.” The term “attached” defines a structural relationship between the end and the body to which the end is attached. The adverb “removably” limits the structural relationship (i.e., the attachment) between the end and the structure to which the end is attached. One of ordinary skill in the art would not consider an end that is welded to a reactor as being “removably attached.” Although a welded end *may* be removed, it is not meant to be removed. Items that are welded, riveted, etc. are not intended to be removed for a very long time, if at all.

Whether an end is “removably attached” or not generally turns on whether the attached end is meant to or intended to be removed, not whether it is physically possible to remove it. Anything *can* be removed if enough force is applied. *See, K-2 Corp. v. Salomon, S.A.*, 191 F.3d 1356, 52 USPQ.2d 1001 (Fed. Cir. 1999) (removable screw attachments are not permanently affixed). *See also, V-Formation v. Benetton SPA, Rollerblade, Inc.*, 03-1408 (Fed. Cir. March 15, 2005) (citing K-2 Corp.). The Court in K-2 Corp. differentiated “removable” from “permanently affixed” by stating “Screws, unlike rivets and laminates, are meant to be unscrewed, that is, to be removed. A rivet or a laminate, to the contrary, is meant to remain permanent, unremovable unless one is bent on breaking the permanent structure apart.” If a structure is broken during an attempt to remove it, it is not removable since for all intents and purposes the structure has been destroyed, not removed, in the process. Thus, attachments that are “removable” or “removably attached” are structurally different than attachments that are not removable.

B. Cocchiara does not teach or suggest “removable liners” or ends that are “removably attached” as required by Claims 12 and 13.

Unlike the present invention, there is no teaching or suggestion in Cocchiara that an end or the liners are meant to be removed. The present invention contemplates liners needing to be replaced due to contact with corrosive fluid streams or abrasive fluid streams. Replacing worn liners requires one or more ends to be removably attached. That is, the ends of the present invention are meant to be removed. The internal lining in Cocchiara, on the other hand, is provided to aid in heat retention. There is no suggestion that these internal linings will need to be inspected or replaced. In fact, Cocchiara teaches away from the present invention in the sense that Cocchiara teaches that the internal lining can be attached by crimping the thin stainless steel lining. Removing the lining in Cocchiara would require that the steel be uncrimped. Crimping and uncrimping steel would cause the steel (i.e., the lining) to weaken and eventually break. It is highly doubtful that Cocchiara intended to break the lining by removing it for inspection.

Appellants contend that Cocchiara does not teach or suggest a “removable liner” or an end that is “removably attached” as required in Claims 12 and 13. Accordingly, Appellants respectfully request this rejection be withdrawn.

IV. Claim Rejections - §103A. Claim 14 is patentable over Cocchiara in view of Carty.

The Examiner cites Carty for the purpose of asserting that fabricating liners from ceramic would be obvious. Neither Cocchiara nor Carty, taken alone or in combination, teach or suggest a removably attached end or a removable liner as required in Claim 12 from which Claim 14 depends. Accordingly, Claim 14 is patentable over the cited combination of references for the same reasons stated above in regards to the rejections under 35 U.S.C. §102. Appellants respectfully request that this rejection be withdrawn.

B. Claim 28 is patentable over Cocchiara in view of Forman, even if Cocchiara and Forman are properly combinable.

Similar to the discussion above, neither Cocchiara nor Forman teach or suggest removable liners. Neither Cocchiara nor Forman teaches or suggests the need or even a benefit from having two substantially-identical components let alone two substantially-identical components that are removably attached to each other. Additionally, Forman does not teach or suggest a substantially-cylindrical body section or a tangential inlet/outlet. The two shells in Forman appear to each form a hemisphere, not a substantially cylindrical body as required by Claim 28. Additionally, the “tubular branch portions” in Forman are not tangential as required by Claim 28 and described in the specification on page 5, lines 14-25. Figure 2 and the accompanying text indicates that at least one of the shells (i.e., shell A) has two “tubular branch portions.” In Figure 2, it appears that shell A is provided with both branch C and branch C2. The accompanying text at lines 11-14 states: “Fig. 2, a front elevation, showing one of the shells provided with two short tubular branch portions to receive the pipes.” It is not at all clear whether the other shell (i.e., shell B) has two tubular branch portions or only one. Of course, if shell B has only one tubular branch portion, then the two shells are not even close to being identical. It is not clear that Cocchiara and Forman are even properly combinable. In the present case, about the only thing Forman has in common with the present invention as claimed in Claim 28 is that Forman teaches two parts that are removably attached.

Cocchiara and Forman, even if properly combinable, do not teach or suggest the present invention as claimed in Claim 28. Accordingly, Appellants respectfully request that this rejection be withdrawn.

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C. Claim 29 is patentable over Cocchiara, Forman, and Carty.

Claim 29 is patentable over Cocchiara, Forman, and Carty for the same reasons that Claim 28 is patentable over Cocchiara and Forman. Claim 29 depends from Claim 28 and, therefore, contains all the limitations of Claim 28. Carty is cited for the purpose of asserting that fabricating liners from ceramic would be obvious. Carty does not teach or suggest the limitations discussed above with respect to Claim 28. Accordingly, Appellants respectfully request that this rejection be withdrawn.


8. SUMMARY

Appellants respectfully request that the claim objections and all claim rejections be withdrawn and that a Notice of Allowance be issued in this matter.

Applicant hereby petitions for any extension of time which is required to maintain the pendency of this case. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50-3735.

If the enclosed papers or fees are considered incomplete, the Mail Room and/or the Application Branch is respectfully requested to contact the undersigned collect at (508) 616-9660, in Westborough, Massachusetts.

Respectfully submitted,



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Attorney Docket No.: TRX06-01(KMG1097)

Dated: August 18, 2006

APPEAL BRIEF

APPENDIX I

The Claims Appendix

1-11. (Canceled)

12. (Original) A piping elbow, comprising:

a substantially cylindrical body having a first end and a second end, wherein at least one of the ends is removably attached, and wherein the body contains a removable liner;

a tangential inlet attached to the body near the first end having a diameter smaller than the diameter of the body, wherein the tangential inlet contains a removable liner; and

a tangential outlet attached to the body near the second end having a diameter smaller than the diameter of the body, wherein the tangential outlet contains a removable liner.

13. (Original) A piping elbow according to Claim 12, wherein the tangential inlet liner and the tangential outlet liner are each inserted into a cavity in the body liner.

14. (Original) A piping elbow according to Claim 12, wherein the body liner, the tangential inlet liner, and the tangential outlet liner are made of ceramic.

15-27. (Canceled)

28. (Previously Presented) A piping elbow comprising:

two substantially-identical components, each component including:

a substantially cylindrical body section having a first end and an open second end, the body section containing a removable liner; and

a tangential inlet/outlet attached to the body section near the first end, the tangential inlet/outlet containing a removable liner,

wherein the second ends of the two components are removably attached to each other.

29. (Previously Presented) A piping elbow according to Claim 28, wherein each of the removable liners is ceramic.

APPENDIX II

Evidence Appendix

The is no pertinent evidence to be cited in this Appendix.

APPENDIX III

Related Proceedings Appendix

There are no known other prior or pending appeals, interferences, or judicial proceedings which may be related to, directly affect, be directly affected by, or have a bearing on the Board's decision in the pending Appeal.